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the dry, dusty streets of the city this was true. Though the fungus was found in June and early July it did not become so destructive until the dry weather of the latter part of July and August.

A few specimens of a *Cystopus* probably belonging to this species was found on *Artemisia biennis*, usually associated with *Peronospora leptosperma*, DeB. It was not very injurious on this plant however, and never occurred in any quantity.

The rainfall for the summer months of the years 1890 and 1891 was as follows :

1890.	in.	1891.	in.
June - - -	7. 91	June - - -	4. 09
July - - -	1. 54	July - - -	2. 01
August - - -	2. 07	August - - -	1. 38

During the two years preceding 1890 the amount of rainfall was much less, being but 5.53 in. for the whole three months in 1888, and 5.03 in. in 1889. During the past summer there were several heavy rains in June, and they were distributed in such a way as to keep up a tolerably luxuriant vegetation throughout the month. The mildews and white rusts were plentiful at this time, but apparently did but little damage. The greatest amount of injury was done during the dry weather of July and August. The fungi had then a good hold on the host plants, many of which were not able to withstand both dry weather and fungous injuries.

On the whole the observations of the season have shown a greater abundance of these fungi here than one would naturally expect to find in so dry a climate. The number of species, while not large, is surprising, and the abundance of each species is very much more so. Another noticeable feature is the injuriousness of such a great majority of the species found.

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Parasitic Fungi as Related to Variegated Plants.*

BY BYRON D. HALSTED.

During the past two years a large number of variegated plants have been examined with reference to the presence of parasitic fungi. Attention was first called to the subject by a study of the foliage of a variegated ash, which had its leaves

* Abstract of paper before Torrey Botanical Club, February 9th, 1892.

badly spotted with a species of *Coniothyrium*, while ordinary ash trees were free from the same fungus. Some of the variegated plants, both of the hardy sorts and those grown under glass, have been badly infested with leaf blights. Of the former may be named the delicate and popular bedding plant called plantain lily (*Funkia undulata*, var. *variegata*) several sorts of variegated pelargoniums and alternantheras. Among the most affected of the tender plants of the variegated class may be mentioned the *Aspedistra lurida*, var. *variegata*, *Ficus elastica*, var. *variegata*, *Abutilon Thomsoni*, *Codiaeum* sp. (crotons), *Dieffenbachia*, sp., *Hydrangea hortensis*, var. *variegata*, *Phrynium variegatum*, *Draecæna*, sp., etc.

Particular attention was paid to the fungi upon the *Funkia* and *Aspedistra*, as they, at sight, manifested some strong points of resemblance. There was no difficulty in growing the anthracnose from one to the other host in cultures, and as the microscopic structure of the fungus upon both is the same, there seemed to be sufficient reason for giving it the name of *Colletotrichum omnivorum*. It remains to be proved that some of the other hosts attacked by a *Colletotrichum* are bearing the same fungus.

The following is an alphabetical list of the genera containing one or more variegated species that are specially subject to the attack of fungi, with the genera of the latter so far as they have been determined:

Abutilon Thomsoni and *A. megapotamicum*—*Colletotrichum*,
Phyllosticta.

Acalypha musica and others—Phyllosticta.

Acuba Japonica—*Colletotrichum*.

Ageratum Mexicanum—Phyllosticta.

Alocasia, several species—*Colletotrichum*, Sac fungus.

Alternanthera paronychoides and others—Phyllosticta.

Aralia pentaphylla, var. *variegata*, *A. Sieboldi*, var. *variegata*—
Leptosphæria.

Aspedistra lurida, var. *variegata*—*Colletotrichum*.

Astilbe Japonica, var. *variegata*—Leptosphæria.

Begonia Rex, and others—*Cercospora*, Phyllosticta and *Colletotrichum*.

Centaurea, a variegated form—*Septoria*.

- Cissus discolor*—Glæosporium.
Codieum triumphans, and many others—Phyllosticta, Glæosporium.
Coleus Verschaffeltii, and others—Phyllosticta.
Cyclamen Persicum, and others—Phyllosticta.
Cypripedium, several variegated species—Colletotrichum, Phyllosticta.
Dieffenbachia, several species—Glæosporium, Colletotrichum.
Dracæna Goldiana, *D. Lindenii* and others—Colletotrichum, Glæosporium, Læstadia, Phyllosticta.
Elæagnus glabra, var. *variegata*—Colletotrichum, Sac fungus.
Eranthemum sp.—Phyllosticta.
Evonymus Japonicus, var. *variegatus*—Coryneum.
Ficus Parcelli, *F. elastica*, var. *variegata*—Glæosporium.
Fraxinus, a variegated form—Coniothyrium.
Funkia undulata, var. *variegata*—Colletotrichum, Phyllosticta.
Hedera Helix, var. *variegata*—Phyllosticta, Colletotrichum.
Hibiscus Syriacus, var. *variegatus*—Phyllosticta.
Hydrangea hortensis, var. *variegata*—Phyllosticta.
Impatiens Sultani, var. *variegata*—Phyllosticta.
Ipomœa Bona-nox—Phyllosticta.
Iresina Herbstii—Colletotrichum, Sac fungus.
Livistonia, a variegated form—Colletotrichum, Glæosporium.
Maranta bicolor, and others—Læstadia, Colletotrichum.
Nepeta Glechoma, var. *variegata*—Phyllosticta, Glæosporium.
Nerium Oleander, var. *variegatum*—Glæosporium.
Ophiopogon Jaburan, var. *variegatus*—Colletotrichum.
Pandanus Veitchii, and others—Glæosporium.
Passiflora, a variegated form—Phyllosticta.
Pelargonium, several variegated varieties—Ascochyta, Colletotrichum.
Phrymium variegatum—Colletotrichum, Glæosporium.
Pittosporum viridiflorum, var. *variegatum*—Phyllosticta.
Ptychosperma, a variegated form—Colletotrichum.
Reinechia variegata—Glæosporium (?).
Rhodea Japonica—Glæosporium (?).
Richardia albo-maculata—Phyllosticta.
Sambucus nigra, var. *variegata*—Phyllosticta.

Sarracenia Drummondii—Colletotrichum, Sac fungus.

Solanum jasminoides, var. *variegatum*—Septoria.

Spiræa, a variegated form—Diplodia.

Stevia, a variegated form—Phyllosticta.

Vinca major, var. *elegantissima*—Phyllosticta, Septoria.

In the above list of fifty genera, which includes more than a hundred species of variegated plants that have been examined, it will be seen that there are three genera of fungi that lead all others. *Phyllosticta* is met with twenty-four (24) times, *Colletotrichum* nineteen (19), and *Glœosporium* twelve (12) times. It is not the purpose here to enter into the causes of etiolation or variegation, or to draw any well defined conclusions from the facts. The ordinary green form of the species has been studied in many instances, as for example in the ash mentioned at the outset, in the *Abutilon*, *Ageratum*, *Ficus*, *Impatiens*, *Nepeta*, *Passiflora*, *Pelargonium*, and others, with the result that they are much less frequently attacked than the variegated sorts. Furthermore, in some plants the etiolated part occupies large portions of the leaf, and as a rule the portions without the chlorophyll are the most susceptible. In the *Aspidistra*, for example, the one half of the long leaf may be green and the other white, in which case the latter is with few exceptions the only one attacked. In the *Hydrangea* the middle of the leaf is etiolated, and here the blight first begins its destructive work. The case is somewhat similar in phrynum. In *Passiflora*, *Pelargonium*, *Sambucus*, *Ageratum*, *Hibiscus*, *Dracæna* and several others, the white is distributed in blotches near to the margin of the leaf, in all of which cases the decay due to the fungus produces a ragged edge. When the variegation is quite evenly distributed over the leaf in like manner, the parasite is widely scattered, and the whole leaf decays, as in the *Dieffenbachia* and *Abutilon*. There seems to be no question that the variegated leaves are more susceptible, and that likewise the etiolated parts are the ones first attacked. The absence of green in a leaf, from this it is to be inferred, is a source of weakness, and upon this account the etiolated tissue is less able to resist the attacks of the fungus germs.

Speaking generally, a variegated plant lacks capacity for the best work, and the gardener, in propagating a variegation, no

matter how it may have originated, is propagating a weakened plant in so far as it has its normal amount of chlorophyll reduced. The fact that some sorts of the self-blanché celery have been found more susceptible to blights and decay bears directly upon this point. It is a pity that so many of our choicest variegated plants blight easily ; it is, however, natural that they should do so. Even a fungus parasite will take the line of least resistance.

Notes on the Flora of Southwestern Connecticut.

BY L. N. JOHNSON.

Every season during the past ten years it has been the good fortune of the writer to spend some weeks collecting in southwestern Connecticut. As some of the finds were of interest these notes have been prepared for the purpose of placing them on record.

The face of the country is diversified, consisting of nearly parallel ridges running north and south, with their slopes about equally covered with woods of oak, chestnut, hickory and maple, and with cultivated ground. Every valley carries a stream, and following these a few miles to the south we come to the plain, which, varying in width, borders Long Island Sound, and furnishes the peculiar vegetation of the salt meadows and marshes. Most of the collecting here described was done in the valley of Mill River, and in the shore region around Bridgeport.

The ridge which runs north from Bridgeport finds its highest point in Tashua Hill, about six miles back from the shore. In the woods on its western slope, and in the adjacent valley, is an admirable collecting ground. Here we find *Cypripedium acaule* growing abundantly, and with it *Pogonia verticillata*, *Liparis liliifolia*, and a number of other orchids, including rarely *Cypripedium parviflorum*. Here too grows *Aristolochia Serpentaria*. It was formerly common, but is now nearly exterminated. The writer procured specimens from a neighbor, but could not induce him to tell the exact locality, as it is still prized as a medicine, and the secret carefully guarded by the lucky finder of its haunts.

In the level meadows along the river grow half a dozen *Habenarias*, most conspicuous of which are *H. psycodes*, with spikes sometimes a foot or more in length, and the more beauti-